



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/715,693

11/18/2003

Charles Wang

PAT 55916-2

5428

54120 7590 06/29/2007

RESEARCH IN MOTION, LTD

102 DECKER CT.

SUITE 180

IRVING, TX 75062

EXAMINER

SMITHERS, MATTHEW

ART UNIT

PAPER NUMBER

2137

MAIL DATE

DELIVERY MODE

06/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/715,693

Applicant(s)

WANG, CHARLES

Examiner

Matthew B. Smithers

Art Unit

2137

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/18/03; 10/29/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed November 18, 2003 and October 29, 2004 have been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-40 are rejected under 35 U.S.C. 102(e) as being anticipated by US 20040053623 granted to Hoff et al.

Regarding claim 1, Hoff meets the claimed limitations as follows:

“A method, comprising:

receiving a reset exchange identification (XID) command at a Logical Link Control (LLC) of a mobile station (MS);

resetting all LLC XID parameters to their default values;

discarding all requests that are pending from a layer-3 communication layer to a plurality of logical link entities (LLEs);

receiving a logical link reset indication (LL-RESET-indication) from the LLC at a Sub-Network Dependent Convergence Protocol (SND CP) layer; and

upon receipt of the LL-RESET-indication, the performing the following acts at the SND CP:

resetting all SND CP XID parameters to their default values; for every network service access point identifier (NSAPI) using unacknowledged peer-to-peer LLC operation, setting a sequence number of the next network packet data unit (N-PDU) to be sent by the SND CP to zero;

if the NSAPI is using unacknowledged peer-to-peer LLC operation, then: transmitting outstanding SND CP-to-LLC requests to the LLC." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 2, Hoff meets the claimed limitations as follows:

"The method of claim 1, comprising the further acts of:

before receiving the XID command:

performing a GSM task;

suspending GPRS service; and

buffering the one or more SND CP-to-LLC requests in the LLC." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 3, Hoff meets the claimed limitations as follows:

"The method of claim 2, comprising the further acts of:

performing a routing area network update, thereby resulting in the reset XID command being received by the LLC after the buffering by the LLC of the one or more

Art Unit: 2137

SNDTCP-to-LLC requests.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 4, Hoff meets the claimed limitations as follows:

“The method of claim 2, wherein the act of performing a GSM task comprises performing a MS location area update, the method further comprising the act of:

performing a GPRS task by the MS after suspending the GPRS service.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 5, Hoff meets the claimed limitations as follows:

“The method of claim 2, wherein the GPRS task comprises sending an electronic mail (e-mail) message.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 6, Hoff meets the claimed limitations as follows:

“The method of claim 1, wherein the SNDTCP-to-LLC requests include logical link unit data requests.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 7, Hoff meets the claimed limitations as follows:

“The method of claim 1, wherein the SNDTCP-to-LLC requests comprise logical link XID requests.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 8, Hoff meets the claimed limitations as follows:

“A method to provide reliable communications between a mobile station (MS) and a wireless communication network after a layer-2 component of the MS is reset, the method comprising the acts of:

sending one or more requests having an unconfirmed transmission status from a layer-3 component of the MS to the layer-2 component; and

sending the one or more requests over an unacknowledged logical link from the MS to the wireless communication network.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 9, Hoff meets the claimed limitations as follows:

“The method of claim 8, comprising the further act of:

acknowledging the layer-3 component that the one or more requests have been transmitted.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 10, Hoff meets the claimed limitations as follows:

“The method of claim 8, wherein the layer-2 component comprises a Sub-Network Dependent Convergence Protocol (SND CP) and the layer-3 component comprises a Logical Link Control (LLC) layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 11, Hoff meets the claimed limitations as follows:

“In a mobile station (MS), a method to prevent discarding one or more requests that are pending from layer-3 to a Logical Link Control (LLC) layer, the method comprising the acts of:

flushing a first instance of one or more pending packet data units (PDUs) from a PDU transmit queue associated with the LLC layer;

receiving a second instance of the one or more pending PDUs from the layer-3; and sending the second instance of the one or more pending PDUs from the MS via an

Art Unit: 2137

unacknowledged logical link.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 12, Hoff meets the claimed limitations as follows:

“A method of resetting Sub-Network Dependent Convergence Protocol (SNDCP) reset exchange identification (XID) parameters, initializing SNDCP unacknowledged Network Service Access Point Identifier (NSAPI) network packet data unit (N-PDU) numbers, and recovering outstanding unacknowledged NSAPI requests, comprising the acts of:

receiving, from a Logical Link Control (LLC) layer, a logical link reset indication (LL-RESET-indication) at the SNDCP;

upon receipt of the LL-RESET-indication, the performing the following acts at the SNDCP:

resetting all SNDCP XID parameters to their default values;

for every network service access point identifier (NSAPI) using unacknowledged peer-to-peer LLC operation, setting a sequence number of the next N-PDU to be sent by the SNDCP to zero; and

if the NSAPI is using unacknowledged peer-to-peer LLC operation: transmitting outstanding SNDCP-to-LLC requests to the LLC.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 13, Hoff meets the claimed limitations as follows:

“A system for unacknowledged Network Layer Service Access Point Identifier (NSAPI) recovery in Sub-Network Dependent Convergence Protocol (SNDCP) communication, comprising:

a recovering SNDCP module having:

- a protocol interface which receives packet data units (PDUs) and multiplexes unacknowledged NSAPI communications into requests;
- means for outstanding request tracking to determine the status of the requests;
- request resending means for selectively resending outstanding requests upon reception of a layer-2 reset indication;
- a layer-2 interface for transmitting the requests and for receiving the layer-2 reset indication;
- a Logical Link Control (LLC) module connected to the layer-2 interface and having:
 - a queue for queuing the requests received from the recovering SNDCP module, the requests including the PDU transmit requests;
 - means for acknowledging the recovering SNDCP upon completion of the requests;
 - means for indicating the layer-2 reset indication to the recovering SNDCP;
- a layer-1 module connected to the LLC module via the layer-1 interface for transmitting the PDUs from a first component of the system to a second component of the system over a physical layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 14, Hoff meets the claimed limitations as follows:

“A system for unacknowledged layer-2 recovery in layer-3 communication, comprising:

- a recovering layer-3 module having:

Art Unit: 2137

a protocol interface for receiving data and multiplexing the data into requests;
means for outstanding request tracking to determine the status of the requests;
request resending means for selectively resending outstanding requests upon
reception of a layer-2 reset indication;

a layer-2 interface for transmitting the requests and for receiving the layer-2 reset
indication;

a layer-2 module connected to the layer-2 interface of the recovering layer-3
module, the layer-2 module having:

a queue for queuing the requests received from the layer-3 module; the requests
including the data;

means for acknowledging to the recovering layer-3 module upon completion of
the requests;

means for indicating a reset condition to the recovering layer-3 module via the
layer-2 reset indication of the layer-2 interface;

a layer-1 interface for transmitting the data to a layer-1 module;

a layer-1 module connected to the layer-2 module via the layer-1 interface for
transmitting the data from a first component of the system to a second component of the
system over a physical layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2,
3, 4, 5, and 6.

Regarding claim 15, Hoff meets the claimed limitations as follows:

“The system of claim 14, wherein the recovering layer-3 module comprises a Sub-
Network Dependent Convergence Protocol (SND CP) module for General Packet Radio

Art Unit: 2137

Service (GPRS).” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 16, Hoff meets the claimed limitations as follows:

“A system of claim 14, wherein the layer-2 module comprises a Logical Link Control (LLC) module for General Packet Radio Service (GPRS).” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 17, Hoff meets the claimed limitations as follows:

“The system of claim 14, wherein the layer-1 module comprises a Global System for Mobile (GSM) sub-layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 18, Hoff meets the claimed limitations as follows:

“The system of claim 14, wherein the layer-1 module comprises a Universal Mobile Telecommunications System (UMTS) sub-layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 19, Hoff meets the claimed limitations as follows:

“A method of layer-2 recovery comprising the acts of:

identifying a layer-2 reset condition in layer-3;

after identifying the layer-2 reset condition, identifying outstanding layer-3 to layer-2 requests for unacknowledged layer-2 communication; and

resending outstanding layer-3 to layer-2 requests from layer-3 to layer-2.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 20, Hoff meets the claimed limitations as follows:

"The method of claim 19, comprising the further acts of:

- upon identifying the reset condition in layer-3:

- setting unacknowledged layer-2 communication sequence acknowledged numbers to layer-2 zero in layer-3; and

- entering a recovery state in layer-3 for communications." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 21, Hoff meets the claimed limitations as follows:

"A protocol stack for a mobile station (MS) comprising:

- a recovering layer which receives data and sends the data as requests, the recovery layer including:

- a tracking module which tracks outstanding requests that have not received acknowledgements from a lower transmitting layer;

- a resend module which resends the outstanding requests upon receiving a reset indicator from the transmitting layer;

- and a transmitting layer which receives requests from the recovering layer, sends acknowledgements to the recovering layer corresponding to requests that have been sent, and signals the reset indicator to the recovery layer upon occurrence of a reset at the transmitting layer." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 22, Hoff meets the claimed limitations as follows:

"A mobile station, comprising:

- a receiver;

a transmitter;

an antenna coupled to the receiver and the transmitter;

one or more processors including:

a layer-2 module which interfaces with the receiver and the transmitter;

a layer-3 module which interfaces with the layer-2 module;

the layer-3 module being operative to facilitate data communication for the mobile station by sending a plurality of requests to a queue of the layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node; and

the layer-3 module being further operative to resend one or more requests that are unacknowledged by the layer-2 module in response to a reset indication.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 23, Hoff meets the claimed limitations as follows:

“The mobile station of claim 22, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 24, Hoff meets the claimed limitations as follows:

“The mobile station of claim 22, further comprising: the layer-2 module comprising a Logical Link Control (LLC) layer; and the layer-3 module comprising a recovering Sub-Network Dependent Convergence Protocol (SNDCCP) layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 25, Hoff meets the claimed limitations as follows:

Art Unit: 2137

"The mobile station of claim 22, further comprising: the layer-3 module being further operative to set, in response to the reset indication at the layer-3 module, a packet data unit (PDU) number to zero for use in resending the one or more requests." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 26, Hoff meets the claimed limitations as follows:

"A method of communicating data comprising:

facilitating data communication by sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node; and

in response to a reset indication, resending one or more requests that are unacknowledged by the layer-2 module." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 27, Hoff meets the claimed limitations as follows:

"The method of claim 26, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 28, Hoff meets the claimed limitations as follows:

"The method of claim 26, wherein the layer-2 module comprises a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SNDCCP) layer." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 29, Hoff meets the claimed limitations as follows:

“The method of claim 26, further comprising the act of:
in response to the reset indication at the layer-3 module, setting a packet data unit (PDU) number to zero for use in resending the one or more requests.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 30, Hoff meets the claimed limitations as follows:

“A method of communicating data in a mobile station, comprising the acts of:

facilitating a data communication by sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node;

receiving a reset at the layer-2 module before the data communication is fully completed;

attempting to continue at least a portion of the data communication by sending one or more additional requests from the layer-3 module to the queue of the layer-2 module;

flushing a queue of the layer-2 module in response to the reset; receiving a reset indication at the layer-3 module; and

in response to the reset indication, resending, from the layer-3 module to the layer-2 module, the one or more additional requests which have been unacknowledged by the layer-2 module.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 31, Hoff meets the claimed limitations as follows:

"The method of claim 30, further comprising:

sending, from the layer-2 module to the destination node, the one or more additional requests resent by the layer-3 module." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 32, Hoff meets the claimed limitations as follows:

"The method of claim 30, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 33, Hoff meets the claimed limitations as follows:

"The method of claim 30, wherein the layer-2 modules a Logical Link recovering Sub-Network Control (LLC) layer and the layer-3 module comprises a Dependent Convergence Protocol (SNDCCP) layer." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 34, Hoff meets the claimed limitations as follows:

"A mobile station, comprising:

- a receiver;

- a transmitter;

- an antenna coupled to the receiver and the transmitter;

- one or more processors including:

 - a layer-2 module which interfaces with the receiver and the transmitter;

 - a layer-3 module which interfaces with the layer-2 module;

the layer-3 module being operative to facilitate a data communication for the mobile station by sending a plurality of requests to a queue of the layer-2 module, each request being a type that is acknowledged from the layer-2 module but unacknowledged from a destination node;

the layer-2 module being operative to receive a reset at the layer-2 module before the data communication is fully completed;

the layer-3 module being operative to continue attempting at least a portion of the data communication by sending one or more additional requests to the layer-2 module;

the layer-2 module being operative to flush the queue in response to the reset;

the layer-3 module being operative to receive a reset indication at the layer-3 module; and

the layer-3 module being operative to resend the one or more additional requests to the layer-2 module which have been unacknowledged by the layer-2 module.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 35, Hoff meets the claimed limitations as follows:

“The mobile station of claim 34, further comprising:

the layer-2 module being further operative to send the one or more additional requests resent from the layer-3 module to the destination node.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 36, Hoff meets the claimed limitations as follows:

Art Unit: 2137

"The mobile station of claim 34, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 37, Hoff meets the claimed limitations as follows:

"The mobile station of claim 34, wherein the layer-2 modules a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SNDCCP) layer." see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 38, Hoff meets the claimed limitations as follows:

"A method of communicating data in a mobile station comprising the acts of:

- operating in a General Packet Radio Service (GPRS) mode;

- facilitating a data communication in the GPRS mode which includes:

- sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged from the layer-2 module but unacknowledged from a Serving GPRS support node (SGSN);

- sending the requests from the queue of the layer-2 module to the SGSN;

- switching operation from the GPRS mode to a Global Systems for Mobile (GSM) mode before the data communication is fully completed;

- attempting to continue at least a portion of the data communication by sending one or more additional requests from the layer-3 module to the layer-2 module;

- receiving a reset at the layer-2 module due to the switching from the GPRS mode;

flushing the queue of the layer-2 module in response to the reset; receiving a reset indication at the layer-3 module;

resending, by the layer-3 module to the layer-2 module, the one or more additional requests which have been unacknowledged by the layer-2 module;

switching operation back to the GPRS mode from the GSM mode; and

completing the data communication in the GPRS mode by sending, from the layer-2 module to the SGSN, the one or more requests resent by the layer-3 module.”

see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 39, Hoff meets the claimed limitations as follows:

“The method of claim 38, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Regarding claim 40, Hoff meets the claimed limitations as follows:

“The method of claim 38, wherein the layer-2 modules a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SNDCP) layer.” see Abstract; paragraphs [0024]-[0087] and figures 1, 2, 3, 4, 5, and 6.

Claims 1-40 are rejected under 35 U.S.C. 102(e) as being anticipated by US 20040210559 granted to Qvigstad.

Regarding claim 1, Qvigstad meets the claimed limitations as follows:

“A method, comprising:

receiving a reset exchange identification (XID) command at a Logical Link Control (LLC) of a mobile station (MS);

resetting all LLC XID parameters to their default values;

discarding all requests that are pending from a layer-3 communication layer to a plurality of logical link entities (LLEs);

receiving a logical link reset indication (LL-RESET-indication) from the LLC at a Sub-Network Dependent Convergence Protocol (SNDCCP) layer; and

upon receipt of the LL-RESET-indication, the performing the following acts at the SNDCCP:

resetting all SNDCCP XID parameters to their default values; for every network service access point identifier (NSAPI) using unacknowledged peer-to-peer LLC operation, setting a sequence number of the next network packet data unit (N-PDU) to be sent by the SNDCCP to zero;

if the NSAPI is using unacknowledged peer-to-peer LLC operation, then: transmitting outstanding SNDCCP-to-LLC requests to the LLC." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 2, Qvigstad meets the claimed limitations as follows:

"The method of claim 1, comprising the further acts of:

before receiving the XID command:

performing a GSM task;

suspending GPRS service; and

buffering the one or more SNDCP-to-LLC requests in the LLC.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 3, Qvigstad meets the claimed limitations as follows:

“The method of claim 2, comprising the further acts of:

performing a routing area network update, thereby resulting in the reset XID command being received by the LLC after the buffering by the LLC of the one or more SNDCP-to-LLC requests.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 4, Qvigstad meets the claimed limitations as follows:

“The method of claim 2, wherein the act of performing a GSM task comprises performing a MS location area update, the method further comprising the act of:

performing a GPRS task by the MS after suspending the GPRS service.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 5, Qvigstad meets the claimed limitations as follows:

“The method of claim 2, wherein the GPRS task comprises sending an electronic mail (e-mail) message.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 6, Qvigstad meets the claimed limitations as follows:

“The method of claim 1, wherein the SNDCP-to-LLC requests include logical link unit data requests.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 7, Qvigstad meets the claimed limitations as follows:

“The method of claim 1, wherein the SNDCP-to-LLC requests comprise logical link XID requests.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 8, Qvigstad meets the claimed limitations as follows:

“A method to provide reliable communications between a mobile station (MS) and a wireless communication network after a layer-2 component of the MS is reset, the method comprising the acts of:

 sending one or more requests having an unconfirmed transmission status from a layer-3 component of the MS to the layer-2 component; and

 sending the one or more requests over an unacknowledged logical link from the MS to the wireless communication network.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 9, Qvigstad meets the claimed limitations as follows:

“The method of claim 8, comprising the further act of:

 acknowledging the layer-3 component that the one or more requests have been transmitted.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 10, Qvigstad meets the claimed limitations as follows:

“The method of claim 8, wherein the layer-2 component comprises a Sub-Network Dependent Convergence Protocol (SND CP) and the layer-3 component comprises a Logical Link Control (LLC) layer.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 11, Qvigstad meets the claimed limitations as follows:

“In a mobile station (MS), a method to prevent discarding one or more requests that are pending from layer-3 to a Logical Link Control (LLC) layer, the method comprising the acts of:

 flushing a first instance of one or more pending packet data units (PDUs) from a PDU transmit queue associated with the LLC layer;

receiving a second instance of the one or more pending PDUs from the layer-3; and sending the second instance of the one or more pending PDUs from the MS via an unacknowledged logical link.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 12, Qvigstad meets the claimed limitations as follows:

“A method of resetting Sub-Network Dependent Convergence Protocol (SND CP) reset exchange identification (XID) parameters, initializing SND CP unacknowledged Network Service Access Point Identifier (NSAPI) network packet data unit (N-PDU) numbers, and recovering outstanding unacknowledged NSAPI requests, comprising the acts of:

receiving, from a Logical Link Control (LLC) layer, a logical link reset indication (LL-RESET-indication) at the SND CP;

upon receipt of the LL-RESET-indication, the performing the following acts at the SND CP:

resetting all SND CP XID parameters to their default values;

for every network service access point identifier (NSAPI) using unacknowledged peer-to-peer LLC operation, setting a sequence number of the next N-PDU to be sent by the SND CP to zero; and

if the NSAPI is using unacknowledged peer-to-peer LLC operation: transmitting outstanding SND CP-to-LLC requests to the LLC.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 13, Qvigstad meets the claimed limitations as follows:

Art Unit: 2137

"A system for unacknowledged Network Layer Service Access Point Identifier (NSAPI) recovery in Sub-Network Dependent Convergence Protocol (SNDCCP) communication, comprising:

- a recovering SNDCCP module having:

- a protocol interface which receives packet data units (PDUs) and multiplexes unacknowledged NSAPI communications into requests;

- means for outstanding request tracking to determine the status of the requests;

- request resending means for selectively resending outstanding requests upon reception of a layer-2 reset indication;

- a layer-2 interface for transmitting the requests and for receiving the layer-2 reset indication;

- a Logical Link Control (LLC) module connected to the layer-2 interface and having:

- a queue for queuing the requests received from the recovering SNDCCP module, the requests including the PDU transmit requests;

- means for acknowledging the recovering SNDCCP upon completion of the requests;

- means for indicating the layer-2 reset indication to the recovering SNDCCP;

- a layer-1 module connected to the LLC module via the layer-1 interface for transmitting the PDUs from a first component of the system to a second component of the system over a physical layer." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 14, Qvigstad meets the claimed limitations as follows:

“A system for unacknowledged layer-2 recovery in layer-3 communication, comprising:

- a recovering layer-3 module having:

- a protocol interface for receiving data and multiplexing the data into requests;

- means for outstanding request tracking to determine the status of the requests;

- request resending means for selectively resending outstanding requests upon reception of a layer-2 reset indication;

- a layer-2 interface for transmitting the requests and for receiving the layer-2 reset indication;

- a layer-2 module connected to the layer-2 interface of the recovering layer-3 module, the layer-2 module having:

- a queue for queuing the requests received from the layer-3 module; the requests including the data;

- means for acknowledging to the recovering layer-3 module upon completion of the requests;

- means for indicating a reset condition to the recovering layer-3 module via the layer-2 reset indication of the layer-2 interface;

- a layer-1 interface for transmitting the data to a layer-1 module;

- a layer-1 module connected to the layer-2 module via the layer-1 interface for transmitting the data from a first component of the system to a second component of the system over a physical layer.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 15, Qvigstad meets the claimed limitations as follows:

Art Unit: 2137

"The system of claim 14, wherein the recovering layer-3 module comprises a Sub-Network Dependent Convergence Protocol (SNDCP) module for General Packet Radio Service (GPRS) ." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 16, Qvigstad meets the claimed limitations as follows:

"A system of claim 14, wherein the layer-2 module comprises a Logical Link Control (LLC) module for General Packet Radio Service (GPRS)." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 17, Qvigstad meets the claimed limitations as follows:

"The system of claim 14, wherein the layer-1 module comprises a Global System for Mobile (GSM) sub-layer." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 18, Qvigstad meets the claimed limitations as follows:

"The system of claim 14, wherein the layer-1 module comprises a Universal Mobile Telecommunications System (UMTS) sub-layer." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 19, Qvigstad meets the claimed limitations as follows:

"A method of layer-2 recovery comprising the acts of:

identifying a layer-2 reset condition in layer-3;

after identifying the layer-2 reset condition, identifying outstanding layer-3 to layer-2 requests for unacknowledged layer-2 communication; and

resending outstanding layer-3 to layer-2 requests from layer-3 to layer-2." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 20, Qvigstad meets the claimed limitations as follows:

"The method of claim 19, comprising the further acts of:

- upon identifying the reset condition in layer-3:

- setting unacknowledged layer-2 communication sequence acknowledged

numbers to layer-2 zero in layer-3; and

- entering a recovery state in layer-3 for communications." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 21, Qvigstad meets the claimed limitations as follows:

"A protocol stack for a mobile station (MS) comprising:

- a recovering layer which receives data and sends the data as requests, the recovery layer including:

- a tracking module which tracks outstanding requests that have not received acknowledgements from a lower transmitting layer;

- a resend module which resends the outstanding requests upon receiving a reset indicator from the transmitting layer;

- and a transmitting layer which receives requests from the recovering layer, sends acknowledgements to the recovering layer corresponding to requests that have been sent, and signals the reset indicator to the recovery layer upon occurrence of a reset at the transmitting layer." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 22, Qvigstad meets the claimed limitations as follows:

"A mobile station, comprising:

- a receiver;

- a transmitter;

an antenna coupled to the receiver and the transmitter;
one or more processors including:
a layer-2 module which interfaces with the receiver and the transmitter;
a layer-3 module which interfaces with the layer-2 module;
the layer-3 module being operative to facilitate data communication for the mobile station by sending a plurality of requests to a queue of the layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node; and

the layer-3 module being further operative to resend one or more requests that are unacknowledged by the layer-2 module in response to a reset indication.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 23, Qvigstad meets the claimed limitations as follows:

“The mobile station of claim 22, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 24, Qvigstad meets the claimed limitations as follows:

“The mobile station of claim 22, further comprising: the layer-2 module comprising a Logical Link Control (LLC) layer; and the layer-3 module comprising a recovering Sub-Network Dependent Convergence Protocol (SNDCCP) layer.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 25, Qvigstad meets the claimed limitations as follows:

"The mobile station of claim 22, further comprising: the layer-3 module being further operative to set, in response to the reset indication at the layer-3 module, a packet data unit (PDU) number to zero for use in resending the one or more requests." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 26, Qvigstad meets the claimed limitations as follows:

"A method of communicating data comprising:

facilitating data communication by sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node; and

in response to a reset indication, resending one or more requests that are unacknowledged by the layer-2 module." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 27, Qvigstad meets the claimed limitations as follows:

"The method of claim 26, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 28, Qvigstad meets the claimed limitations as follows:

"The method of claim 26, wherein the layer-2 module comprises a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SND CP) layer." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 29, Qvigstad meets the claimed limitations as follows:

"The method of claim 26, further comprising the act of:
in response to the reset indication at the layer-3 module, setting a packet data unit (PDU) number to zero for use in resending the one or more requests." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 30, Qvigstad meets the claimed limitations as follows:

"A method of communicating data in a mobile station, comprising the acts of:

facilitating a data communication by sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node;

receiving a reset at the layer-2 module before the data communication is fully completed;

attempting to continue at least a portion of the data communication by sending one or more additional requests from the layer-3 module to the queue of the layer-2 module;

flushing a queue of the layer-2 module in response to the reset; receiving a reset indication at the layer-3 module; and

in response to the reset indication, resending, from the layer-3 module to the layer-2 module, the one or more additional requests which have been unacknowledged by the layer-2 module." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 31, Qvigstad meets the claimed limitations as follows:

"The method of claim 30, further comprising:

sending, from the layer-2 module to the destination node, the one or more additional

requests resent by the layer-3 module.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 32, Qvigstad meets the claimed limitations as follows:

“The method of claim 30, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 33, Qvigstad meets the claimed limitations as follows:

“The method of claim 30, wherein the layer-2 modules a Logical Link recovering Sub-Network Control (LLC) layer and the layer-3 module comprises a Dependent Convergence Protocol (SNDCCP) layer.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 34, Qvigstad meets the claimed limitations as follows:

“A mobile station, comprising:

- a receiver;

- a transmitter;

- an antenna coupled to the receiver and the transmitter;

- one or more processors including:

- a layer-2 module which interfaces with the receiver and the transmitter;

- a layer-3 module which interfaces with the layer-2 module;

- the layer-3 module being operative to facilitate a data communication for the mobile station by sending a plurality of requests to a queue of the layer-2 module, each

request being a type that is acknowledged from the layer-2 module but unacknowledged from a destination node;

the layer-2 module being operative to receive a reset at the layer-2 module before the data communication is fully completed;

the layer-3 module being operative to continue attempting at least a portion of the data communication by sending one or more additional requests to the layer-2 module;

the layer-2 module being operative to flush the queue in response to the reset;

the layer-3 module being operative to receive a reset indication at the layer-3 module; and

the layer-3 module being operative to resend the one or more additional requests to the layer-2 module which have been unacknowledged by the layer-2 module.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 35, Qvigstad meets the claimed limitations as follows:

“The mobile station of claim 34, further comprising:

the layer-2 module being further operative to send the one or more additional requests resent from the layer-3 module to the destination node.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 36, Qvigstad meets the claimed limitations as follows:

“The mobile station of claim 34, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 37, Qvigstad meets the claimed limitations as follows:

"The mobile station of claim 34, wherein the layer-2 modules a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SNDCP) layer." see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 38, Qvigstad meets the claimed limitations as follows:

"A method of communicating data in a mobile station comprising the acts of:

- operating in a General Packet Radio Service (GPRS) mode;

- facilitating a data communication in the GPRS mode which includes:

- sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged from the layer-2 module but unacknowledged from a Serving GPRS support node (SGSN);

- sending the requests from the queue of the layer-2 module to the SGSN;

- switching operation from the GPRS mode to a Global Systems for Mobile (GSM) mode before the data communication is fully completed;

- attempting to continue at least a portion of the data communication by sending one or more additional requests from the layer-3 module to the layer-2 module;

- receiving a reset at the layer-2 module due to the switching from the GPRS mode;

- flushing the queue of the layer-2 module in response to the reset; receiving a reset indication at the layer-3 module;

- resending, by the layer-3 module to the layer-2 module, the one or more additional requests which have been unacknowledged by the layer-2 module;

Art Unit: 2137

switching operation back to the GPRS mode from the GSM mode; and
completing the data communication in the GPRS mode by sending, from the
layer-2 module to the SGSN, the one or more requests resent by the layer-3 module.”
see paragraphs [0042]-[0092] and figures 4 and 5.

Regarding claim 39, Qvigstad meets the claimed limitations as follows:

“The method of claim 38, wherein the requests comprise unacknowledged Network
Layer Service Access Point Identifier (NSAPI) requests.” see paragraphs [0042]-[0092]
and figures 4 and 5.

Regarding claim 40, Qvigstad meets the claimed limitations as follows:

“The method of claim 38, wherein the layer-2 modules a Logical Link Control (LLC)
layer and the layer-3 module comprises a recovering Sub-Network Dependent
Convergence Protocol (SNDCP) layer.” see paragraphs [0042]-[0092] and figures 4 and
5.

Claims 1-40 are rejected under 35 U.S.C. 102(e) as being anticipated by US
6,385,451 granted to Kalliokulju et al.

Regarding claim 1, Kalliokulju meets the claimed limitations as follows:

“A method, comprising:

receiving a reset exchange identification (XID) command at a Logical Link
Control (LLC) of a mobile station (MS);

resetting all LLC XID parameters to their default values;

discarding all requests that are pending from a layer-3 communication layer to a plurality of logical link entities (LLEs);

receiving a logical link reset indication (LL-RESET-indication) from the LLC at a Sub-Network Dependent Convergence Protocol (SNDCP) layer; and

upon receipt of the LL-RESET-indication, the performing the following acts at the SNDCP:

resetting all SNDCP XID parameters to their default values; for every network service access point identifier (NSAPI) using unacknowledged peer-to-peer LLC operation, setting a sequence number of the next network packet data unit (N-PDU) to be sent by the SNDCP to zero;

if the NSAPI is using unacknowledged peer-to-peer LLC operation, then: transmitting outstanding SNDCP-to-LLC requests to the LLC.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 2, Kalliokulju meets the claimed limitations as follows:

“The method of claim 1, comprising the further acts of:

before receiving the XID command:

performing a GSM task;

suspending GPRS service; and

buffering the one or more SNDCP-to-LLC requests in the LLC.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 3, Kalliokulju meets the claimed limitations as follows:

“The method of claim 2, comprising the further acts of:

performing a routing area network update, thereby resulting in the reset XID command being received by the LLC after the buffering by the LLC of the one or more SNDCP-to-LLC requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 4, Kalliokulju meets the claimed limitations as follows:

“The method of claim 2, wherein the act of performing a GSM task comprises performing a MS location area update, the method further comprising the act of:

performing a GPRS task by the MS after suspending the GPRS service.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 5, Kalliokulju meets the claimed limitations as follows:

“The method of claim 2, wherein the GPRS task comprises sending an electronic mail (e-mail) message.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 6, Kalliokulju meets the claimed limitations as follows:

“The method of claim 1, wherein the SNDCP-to-LLC requests include logical link unit data requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 7, Kalliokulju meets the claimed limitations as follows:

“The method of claim 1, wherein the SNDCP-to-LLC requests comprise logical link XID requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 8, Kalliokulju meets the claimed limitations as follows:

"A method to provide reliable communications between a mobile station (MS) and a wireless communication network after a layer-2 component of the MS is reset, the method comprising the acts of:

 sending one or more requests having an unconfirmed transmission status from a layer-3 component of the MS to the layer-2 component; and

 sending the one or more requests over an unacknowledged logical link from the MS to the wireless communication network." see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 9, Kalliokulju meets the claimed limitations as follows:

"The method of claim 8, comprising the further act of:

 acknowledging the layer-3 component that the one or more requests have been transmitted." see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 10, Kalliokulju meets the claimed limitations as follows:

"The method of claim 8, wherein the layer-2 component comprises a Sub-Network Dependent Convergence Protocol (SND CP) and the layer-3 component comprises a Logical Link Control (LLC) layer." see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 11, Kalliokulju meets the claimed limitations as follows:

"In a mobile station (MS), a method to prevent discarding one or more requests that are pending from layer-3 to a Logical Link Control (LLC) layer, the method comprising the acts of:

flushing a first instance of one or more pending packet data units (PDUs) from a PDU transmit queue associated with the LLC layer;

receiving a second instance of the one or more pending PDUs from the layer-3; and sending the second instance of the one or more pending PDUs from the MS via an unacknowledged logical link.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 12, Kalliokulju meets the claimed limitations as follows:

“A method of resetting Sub-Network Dependent Convergence Protocol (SND CP) reset exchange identification (XID) parameters, initializing SND CP unacknowledged Network Service Access Point Identifier (NSAPI) network packet data unit (N-PDU) numbers, and recovering outstanding unacknowledged NSAPI requests, comprising the acts of:

receiving, from a Logical Link Control (LLC) layer, a logical link reset indication (LL-RESET-indication) at the SND CP;

upon receipt of the LL-RESET-indication, the performing the following acts at the SND CP:

resetting all SND CP XID parameters to their default values;

for every network service access point identifier (NSAPI) using unacknowledged peer-to-peer LLC operation, setting a sequence number of the next N-PDU to be sent by the SND CP to zero; and

if the NSAPI is using unacknowledged peer-to-peer LLC operation: transmitting outstanding SND CP-to-LLC requests to the LLC.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 13, Kalliokulju meets the claimed limitations as follows:

"A system for unacknowledged Network Layer Service Access Point Identifier (NSAPI) recovery in Sub-Network Dependent Convergence Protocol (SNDCCP) communication, comprising:

- a recovering SNDCCP module having:

- a protocol interface which receives packet data units (PDUs) and multiplexes unacknowledged NSAPI communications into requests;

- means for outstanding request tracking to determine the status of the requests;

- request resending means for selectively resending outstanding requests upon reception of a layer-2 reset indication;

- a layer-2 interface for transmitting the requests and for receiving the layer-2 reset indication;

- a Logical Link Control (LLC) module connected to the layer-2 interface and having:

- a queue for queuing the requests received from the recovering SNDCCP module, the requests including the PDU transmit requests;

- means for acknowledging the recovering SNDCCP upon completion of the requests;

- means for indicating the layer-2 reset indication to the recovering SNDCCP;

- a layer-1 module connected to the LLC module via the layer-1 interface for transmitting the PDUs from a first component of the system to a second component of

Art Unit: 2137

the system over a physical layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 14, Kalliokulju meets the claimed limitations as follows:

“A system for unacknowledged layer-2 recovery in layer-3 communication, comprising:

- a recovering layer-3 module having:

- a protocol interface for receiving data and multiplexing the data into requests;

- means for outstanding request tracking to determine the status of the requests;

- request resending means for selectively resending outstanding requests upon reception of a layer-2 reset indication;

- a layer-2 interface for transmitting the requests and for receiving the layer-2 reset indication;

- a layer-2 module connected to the layer-2 interface of the recovering layer-3 module, the layer-2 module having:

- a queue for queuing the requests received from the layer-3 module; the requests including the data;

- means for acknowledging to the recovering layer-3 module upon completion of the requests;

- means for indicating a reset condition to the recovering layer-3 module via the layer-2 reset indication of the layer-2 interface;

- a layer-1 interface for transmitting the data to a layer-1 module;

- a layer-1 module connected to the layer-2 module via the layer-1 interface for transmitting the data from a first component of the system to a second component of the

Art Unit: 2137

system over a physical layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 15, Kalliokulju meets the claimed limitations as follows:

“The system of claim 14, wherein the recovering layer-3 module comprises a Sub-Network Dependent Convergence Protocol (SNDCP) module for General Packet Radio Service (GPRS) .” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 16, Kalliokulju meets the claimed limitations as follows:

“A system of claim 14, wherein the layer-2 module comprises a Logical Link Control (LLC) module for General Packet Radio Service (GPRS) .” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 17, Kalliokulju meets the claimed limitations as follows:

“The system of claim 14, wherein the layer-1 module comprises a Global System for Mobile (GSM) sub-layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 18, Kalliokulju meets the claimed limitations as follows:

“The system of claim 14, wherein the layer-1 module comprises a Universal Mobile Telecommunications System (UMTS) sub-layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 19, Kalliokulju meets the claimed limitations as follows:

“A method of layer-2 recovery comprising the acts of:

identifying a layer-2 reset condition in layer-3;

after identifying the layer-2 reset condition, identifying outstanding layer-3 to layer-2 requests for unacknowledged layer-2 communication; and

resending outstanding layer-3 to layer-2 requests from layer-3 to layer-2.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 20, Kalliokulju meets the claimed limitations as follows:

“The method of claim 19, comprising the further acts of:

upon identifying the reset condition in layer-3:

setting unacknowledged layer-2 communication sequence acknowledged numbers to layer-2 zero in layer-3; and

entering a recovery state in layer-3 for communications.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 21, Kalliokulju meets the claimed limitations as follows:

“A protocol stack for a mobile station (MS) comprising:

a recovering layer which receives data and sends the data as requests, the recovery layer including:

a tracking module which tracks outstanding requests that have not received acknowledgements from a lower transmitting layer;

a resend module which resends the outstanding requests upon receiving a reset indicator from the transmitting layer;

and a transmitting layer which receives requests from the recovering layer, sends acknowledgements to the recovering layer corresponding to requests that have been sent, and signals the reset indicator to the recovery layer upon occurrence of a reset at

Art Unit: 2137

the transmitting layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 22, Kalliokulju meets the claimed limitations as follows:

“A mobile station, comprising:

- a receiver;

- a transmitter;

- an antenna coupled to the receiver and the transmitter;

- one or more processors including:

 - a layer-2 module which interfaces with the receiver and the transmitter;

 - a layer-3 module which interfaces with the layer-2 module;

 - the layer-3 module being operative to facilitate data communication for the mobile station by sending a plurality of requests to a queue of the layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node; and

 - the layer-3 module being further operative to resend one or more requests that are unacknowledged by the layer-2 module in response to a reset indication.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 23, Kalliokulju meets the claimed limitations as follows:

“The mobile station of claim 22, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 24, Kalliokulju meets the claimed limitations as follows:

“The mobile station of claim 22, further comprising: the layer-2 module comprising a Logical Link Control (LLC) layer; and the layer-3 module comprising a recovering Sub-Network Dependent Convergence Protocol (SNDCP) layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 25, Kalliokulju meets the claimed limitations as follows:

“The mobile station of claim 22, further comprising: the layer-3 module being further operative to set, in response to the reset indication at the layer-3 module, a packet data unit (PDU) number to zero for use in resending the one or more requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 26, Kalliokulju meets the claimed limitations as follows:

“A method of communicating data comprising:

facilitating data communication by sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node; and

in response to a reset indication, resending one or more requests that are unacknowledged by the layer-2 module.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 27, Kalliokulju meets the claimed limitations as follows:

“The method of claim 26, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 28, Kalliokulju meets the claimed limitations as follows:

Art Unit: 2137

"The method of claim 26, wherein the layer-2 module comprises a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SNDCP) layer." see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 29, Kalliokulju meets the claimed limitations as follows:

"The method of claim 26, further comprising the act of:

in response to the reset indication at the layer-3 module, setting a packet data unit (PDU) number to zero for use in resending the one or more requests." see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 30, Kalliokulju meets the claimed limitations as follows:

"A method of communicating data in a mobile station, comprising the acts of:

facilitating a data communication by sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged by the layer-2 module but unacknowledged by a destination node;

receiving a reset at the layer-2 module before the data communication is fully completed;

attempting to continue at least a portion of the data communication by sending one or more additional requests from the layer-3 module to the queue of the layer-2 module;

flushing a queue of the layer-2 module in response to the reset; receiving a reset indication at the layer-3 module; and

in response to the reset indication, resending, from the layer-3 module to the layer-2 module, the one or more additional requests which have been unacknowledged by the layer-2 module.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 31, Kalliokulju meets the claimed limitations as follows:

“The method of claim 30, further comprising:

sending, from the layer-2 module to the destination node, the one or more additional requests resent by the layer-3 module.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 32, Kalliokulju meets the claimed limitations as follows:

“The method of claim 30, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 33, Kalliokulju meets the claimed limitations as follows:

“The method of claim 30, wherein the layer-2 modules a Logical Link recovering Sub-Network Control (LLC) layer and the layer-3 module comprises a Dependent Convergence Protocol (SNDCCP) layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 34, Kalliokulju meets the claimed limitations as follows:

“A mobile station, comprising:

a receiver;

a transmitter;

an antenna coupled to the receiver and the transmitter;

one or more processors including:

a layer-2 module which interfaces with the receiver and the transmitter;

a layer-3 module which interfaces with the layer-2 module;

the layer-3 module being operative to facilitate a data communication for the mobile station by sending a plurality of requests to a queue of the layer-2 module, each request being a type that is acknowledged from the layer-2 module but unacknowledged from a destination node;

the layer-2 module being operative to receive a reset at the layer-2 module before the data communication is fully completed;

the layer-3 module being operative to continue attempting at least a portion of the data communication by sending one or more additional requests to the layer-2 module;

the layer-2 module being operative to flush the queue in response to the reset;

the layer-3 module being operative to receive a reset indication at the layer-3 module; and

the layer-3 module being operative to resend the one or more additional requests to the layer-2 module which have been unacknowledged by the layer-2 module." see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 35, Kalliokulju meets the claimed limitations as follows:

"The mobile station of claim 34, further comprising:

the layer-2 module being further operative to send the one or more additional requests resent from the layer-3 module to the destination node.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 36, Kalliokulju meets the claimed limitations as follows:

“The mobile station of claim 34, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 37, Kalliokulju meets the claimed limitations as follows:

“The mobile station of claim 34, wherein the layer-2 modules a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SND CP) layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 38, Kalliokulju meets the claimed limitations as follows:

“A method of communicating data in a mobile station comprising the acts of:

- operating in a General Packet Radio Service (GPRS) mode;

- facilitating a data communication in the GPRS mode which includes:

- sending a plurality of requests from a layer-3 module to a queue of a layer-2 module, each request being a type that is acknowledged from the layer-2 module but unacknowledged from a Serving GPRS support node (SGSN);

- sending the requests from the queue of the layer-2 module to the SGSN;

- switching operation from the GPRS mode to a Global Systems for Mobile (GSM) mode before the data communication is fully completed;

attempting to continue at least a portion of the data communication by sending one or more additional requests from the layer-3 module to the layer-2 module;

receiving a reset at the layer-2 module due to the switching from the GPRS mode;

flushing the queue of the layer-2 module in response to the reset; receiving a reset indication at the layer-3 module;

resending, by the layer-3 module to the layer-2 module, the one or more additional requests which have been unacknowledged by the layer-2 module;

switching operation back to the GPRS mode from the GSM mode; and

completing the data communication in the GPRS mode by sending, from the layer-2 module to the SGSN, the one or more requests resent by the layer-3 module.”

see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 39, Kalliokulju meets the claimed limitations as follows:

“The method of claim 38, wherein the requests comprise unacknowledged Network Layer Service Access Point Identifier (NSAPI) requests.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Regarding claim 40, Kalliokulju meets the claimed limitations as follows:

“The method of claim 38, wherein the layer-2 modules a Logical Link Control (LLC) layer and the layer-3 module comprises a recovering Sub-Network Dependent Convergence Protocol (SND CP) layer.” see column 9, line 66 to column 15, line 29; and figures 2, 3, 4 and 5.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A. Leppisaari et al (US 6,717,925) discloses a method of operating point-to-multipoint mobile radio transmission.

B. Mustajarvi et al (US 6,512,756) discloses a method of updating in packet radio network.

C.. Lupien et al (US 6,463,055) discloses a method of internetworking an ANSI network and GPRS network.


D. Hamalainen (US 6,4345,133) discloses a method for handing over a connection between communicating networks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew B. Smithers whose telephone number is (571) 272-3876. The examiner can normally be reached on Monday-Friday (8:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel L. Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2137

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Matthew B Smithers
Primary Examiner
Art Unit 2137